CLAIMS

What is claimed is:

1.   An optical disk comprising a substrate, having an outer diameter less than 120 mm and not smaller than 28mm and a thickness less than 1.1 mm and not smaller than 0.29mm, so that a deflection angle of 0.7° or smaller is obtained.

2.   The optical disk of claim 1, wherein when the outer diameter is 30mm, the thickness is determined to be 0.30mm or larger.

3.   The optical disk of claim 1, wherein when the outer diameter is 32mm, the thickness is determined to be 0.31mm or larger.

4.   The optical disk of claim 1, wherein when the outer diameter is 47mm, the thickness is determined to be 0.375mm or larger.

5.   The optical disk of claim 1, wherein when the outer diameter is 50.8mm, the thickness is determined to be 0.388mm or larger.

6.   The optical disk of claim 1, wherein when the outer diameter is 80mm, the thickness is determined to be 0.501mm or larger.

7.   The optical disk of claim 1, wherein when the outer diameter is 120mm, the thickness is determined to be 0.53mm or larger.

8.   The optical disk of claim 1, wherein an optical transmission layer having a thickness of 0.03 – 0.1mm is formed on the surface of the substrate.

9.   The optical disk according to claim 1, having an outer diameter not smaller than 28mm and a thickness not smaller than 0.323mm, so that a deflection angle of 0.6° or smaller is obtained.

10.   An optical disk comprising a substrate, having a deflection angle y, a thickness x, and an outer diameter z, the deflection angle y, the thickness x, the outer diameter z satisfying the following inequality:

$$\alpha = 0.00396z^2 - 0.10096z + 4.15552$$
$$\beta = 0.00027z^2 - 0.05129z - 2.98393,$$
$$x \geq \frac{1}{\beta}\ln(\frac{1.1 \times y}{\alpha})$$

wherein α and β represent characteristic coefficients.

11.   The optical disk of claim 10, wherein the deflection angle y is 0.6° or smaller.

12.   The optical disk of claim 11, wherein the characteristic coefficients α and β are set to 4.6867 and –4.3083, respectively, when the outer diameter z is 30mm.

13.   The optical disk of claim 11, wherein the characteristic coefficients α and β are set to 4.9484 and –4.3162, respectively, when the outer diameter z is 32mm.

14.   The optical disk of claim 11, wherein the characteristic coefficients α and β are set to 8.9926 and –4.8605, respectively, when the outer diameter z is 50.8mm.

15.   The optical disk of claim 11, wherein the characteristic coefficients α and β are set to 21.446 and –5.3843, respectively, when the outer diameter z is 80mm.

16.   The optical disk of claim 10, wherein the characteristic coefficients α and β are obtained using the following equations for the thickness x and the deflection angle y:

$$\sum_{i=1}^{n} y_i \cdot \exp(\beta \cdot x_i) = \alpha \sum_{i=1}^{n} \exp(2\beta \cdot x_i)$$

$$\sum_{i=1}^{n} y_i \cdot \exp(\beta \cdot x_i)\sum_{i=1}^{n} x_i \cdot \exp(2\beta \cdot x_i) = \sum_{i=1}^{n} \exp(2\beta \cdot x_i)\sum_{i=1}^{n} x_i \cdot y_i \cdot \exp(\beta \cdot x_i).$$

17.   The optical disk of claim 10, wherein an optical transmission layer having a thickness of 0.03 – 0.1mm is formed on the surface of the substrate.

18.   The optical disk of claim 10, wherein the optical transmission layer is formed of acrylate-based resin or polycarbonate.

19.   The optical disk according to claim 1, having an outer diameter not smaller than 30mm and a thickness not smaller than 0.40mm, so that a deflection angle of 0.7° or smaller is obtained.

20.   The optical disk according to claim 1, having an outer diameter not smaller than 30mm and a thickness not smaller than 0.435mm, so that a deflection angle of 0.6° or smaller is obtained.